

Appl. No. 10/721,876
Examiner: Lum, Leon, Art Unit 1641
In response to the Office Action dated December 20, 2005

Date: April 20, 2006
Attorney Docket No. 10116401

REMARKS

Responsive to the Office Action mailed on December 20, 2005 in the above-referenced application, Applicant respectfully requests amendment of the above-identified application in the manner identified above and that the patent be granted in view of the arguments presented. No new matter has been added by this amendment.

Present Status of Application

Claims 1-35 are pending. Claims 1-24 are withdrawn from consideration. Claim 25 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process. Claims 25-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 25-26 and 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wada et al (US 2005/0056828 A1, hereinafter "Wada") and Snow et al (US6,482,639 B2, hereinafter "Snow"). Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wada, Snow, and Tsuruta et al (US 5,066,582, hereinafter Tsuruta).

In this paper, claims 25-27 and 29-35 are amended. In particular, claim 25 is amended to more clearly identify the arrangement of the source and drain and the nano channel layer. Support for the amendments can be found at least in Figs. 5D-H and the related text of the application.

Reconsideration of this application is respectfully requested in light of the amendments and the remarks contained below.

Rejections Under 35 U.S.C. 101

Claim 25 is amended to cancel the language identified by the Examiner as reciting a use. Applicant submits that the rejection of claim 25 under 35 U.S.C. 101 is thereby overcome. Applicant further notes that claim 25 is directed to a structure, not a process.

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Rejections Under 35 U.S.C. 112

Claims 25-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 25-27 and 29-35 are amended to address the various informalities noted by the Examiner and to improve clarity and form. Applicant submits that the rejections under 35 U.S.C. 112 are thereby overcome.

Rejections Under 35 U.S.C. 103(a)

Claims 25-26 and 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wada and Snow. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wada, Snow, and Tsuruta. To the extent that the grounds of the rejections may be applied to the claims now pending in this application, they are respectfully traversed.

In the rejections, the Examiner identifies the gate electrode 2, source electrode 4, drain electrode 5, channel layer 6, and gate insulating film 3 of Wada as the alleged bottom gate, source, drain, nano channel layer, and gate dielectric layer of claim 25. The Examiner further identifies layers 60 and 70 and electrode 50 of Snow as the alleged first and second ceiling gate dielectric layers and ceiling gate of claim 25.

MPEP 2142 reads in part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In connection with the third criteria, MPEP 2143.03 goes on the state:

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To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

As amended, claim 25 recites a structure of a nano device transistor for a biosensor comprising:

- ... a nano channel layer positioned on the gate dielectric layer;
- a drain positioned extending over a first portion of a top surface of the nano channel layer and a first portion of a top surface the gate dielectric layer,**
- a source positioned extending over a second portion of the top surface of the nano channel layer and a second portion of the top surface the gate dielectric layer,**
- a ceiling gate dielectric layer comprising a first ceiling gate dielectric layer portion and a second ceiling gate dielectric layer portion positioned on the drain and the source, respectively;
- a ceiling gate positioned on the ceiling gate dielectric layer ...

Applicant submits that whether taken alone or in combination, Wada and Snow fail to teach at least the limitations "a drain positioned extending over a first portion of a top surface of the nano channel layer and a first portion of a top surface the gate dielectric layer" and "a source positioned extending over a second portion of the top surface of the nano channel layer and a second portion of the top surface the gate dielectric layer" as recited in claim 25. To the contrary, Fig. 4D of Wada shows that the channel layer 6 is formed over source electrode 4 and drain electrode 5. Also see paragraph 0140 of Wada, which states that the channel layer may optionally be disposed in the recess between source electrode 4 and drain electrode 5. Similarly, Fig. 1 of Snow shows that the layer comprising molecular sensor receptors 100 is formed over source 12 and drain 14. Also see column 3, lines 59-61 of Snow.

Applicant further notes that Snow is relied upon by the Examiner to teach the ceiling gate of claim 25. However, Snow explicitly states that the disclosed device is a "gateless" FET. See column 3, lines 25-28 of Snow.

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It is therefore Applicant's belief that even when taken in combination, the prior art references relied upon by the Examiner do not teach or suggest all the limitations of claim 25. For at least this reason, a *prima facie* case of obviousness cannot be established in connection with this claim. Furthermore, as it is Applicant's belief that a *prima facie* case of obviousness is not established for claim 25, the Examiner's arguments in regard to the dependent claims are considered moot and are not addressed here. Allowance of claims 25-35 is respectfully requested.

Conclusion

The Applicant believes that the application is now in condition for allowance and respectfully requests so.

Respectfully submitted,



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